

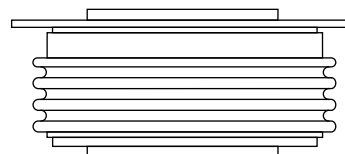
Standard Recovery Diodes (Hockey PUK Version), 1070A

FEATURES

- Wide current range
- High voltage ratings up to 6000V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AB(B-PUK), Nell's C-type Capsule
- Lead (Pb)-free

TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications



DO-200AB(B-PUK)
(Nell's C-type capsule)

PRODUCT SUMMARY

$I_{F(AV)}$	1070A
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MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	D1070C		UNIT
		36 to 45	50 to 60	
$I_{F(AV)}$		1070	1030	A
	T_{hs}	55	55	°C
$I_{F(RMS)}$		2040	1910	A
	T_{hs}	25	25	°C
I_{FSM}	50 HZ	12000	7200	A
	60 HZ	12560	7530	
I^2t	50 HZ	720	259	kA^2s
	60 HZ	655	235	
V_{RRM}		3600 to 4500	5000 to 6000	V
T_J	Typical	-40 to 150		°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} , MAXIMUM AT $T_J = T_J$ MAXIMUM mA
D1070C	36	3600	3700	50
	40	4000	4100	
	45	4500	4600	
	50	5000	5100	
	54	5400	5500	
	56	5600	5700	
	58	5800	5900	
	60	6000	6100	

Nell High Power Products

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			D1070C		UNIT
					36 to 45	50 to 60	
Maximum average forward current at heatsink temperature	I _{F(AV)}	180° conduction, half sine wave Double side (single side) cooled			1070 (550)	1030 (520)	A
					55 (85)	55 (85)	°C
Maximum RMS forward current	I _{F(RMS)}	25°C heatsink temperature double side cooled			2040	1910	A
Maximum peak, one cycle non-reptive surge current	I _{FSM}	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	12000	7200	A
		t = 8.3ms			12560	7530	
		t = 10ms	100%V _{RRM} reapplied		10080	6050	
		t = 8.3ms			10550	6325	
Maximum I ² t for fusing	I ² t	t = 10ms	No voltage reapplied		720	259	kA ² s
		t = 8.3ms			655	235	
		t = 10ms	100%V _{RRM} reapplied		508	183	
		t = 8.3ms			462	166	
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			7200	2592	kA ² √s
Low level value of threshold voltage	V _{F(TO)1}	(16.7% x π x I _{F(AV)}) < I < π x I _{F(AV)} T _J = T _J maximum			0.9	1.10	V
High level value of threshold voltage	V _{F(TO)2}	(I > π x I _{F(AV)}), T _J = T _J maximum			1.2	1.35	
Low level value of forward slope resistance	r _{t1}	(16.7% x π x I _{F(AV)}) < I < π x I _{F(AV)} T _J = T _J maximum			0.45	0.58	
High level value of forward slope resistance	r _{t2}	(I > π x I _{F(AV)}), T _J = T _J maximum			0.34	0.46	mΩ
Maximum forward voltage drop	V _{FM}	I _{pk} = 2000A, T _J = T _J maximum, t _p = 10 ms sinusoidal wave			1.95	2.55	V

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
Maximum junction operating temperature range	T_J		-40 to 150	°C
Maximum storage temperature range	T_{stg}		-55 to 200	
Maximum thermal resistance, junction to heatsink	R_{thJ-hs}	DC operation single side cooled DC operation double side cooled	0.073 0.031	K/W
Mounting force, ±10%			14700 (1500)	N (kg)
Approximate weight			250	g
Case style		DO-200AB (B-PUK), Nell's C-type Capsule		

△ R_{thJc} CONDUCTION					
CONDUCTION ANGEL	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDUCTIONS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE	
180°	0.009	0.009	0.006	0.006	$T_J = T_J$ maximum
120°	0.011	0.011	0.011	0.011	
90°	0.014	0.014	0.015	0.015	
60°	0.020	0.020	0.021	0.021	
30°	0.036	0.036	0.036	0.036	

Note

- The table above shows the increment of thermal resistance R_{thJ-hs} when devices operate at different conduction angles than DC

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Fig.1 Current ratings characteristics

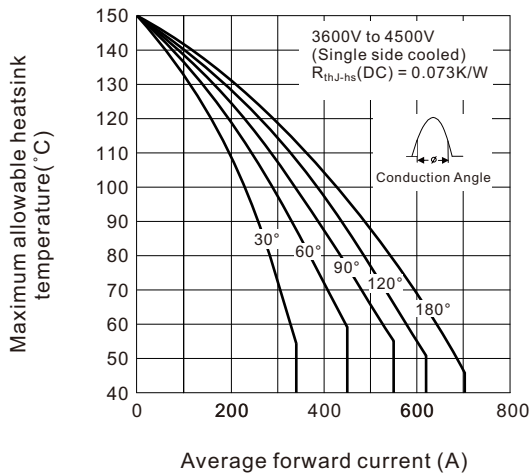


Fig.2 Current ratings characteristics

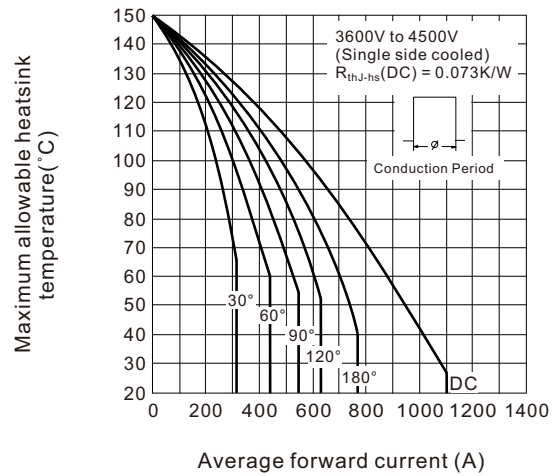


Fig.3 Current ratings characteristics

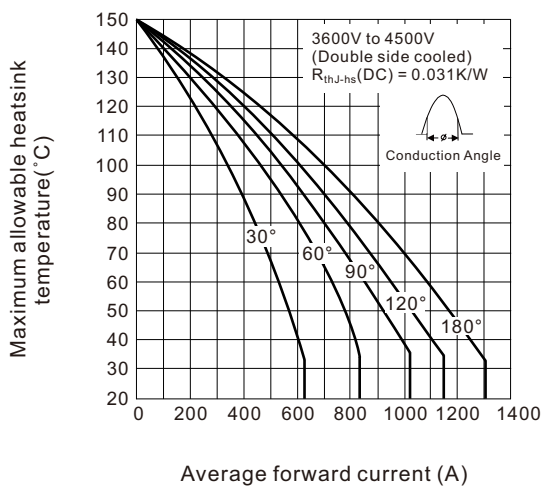


Fig.4 Current ratings characteristics

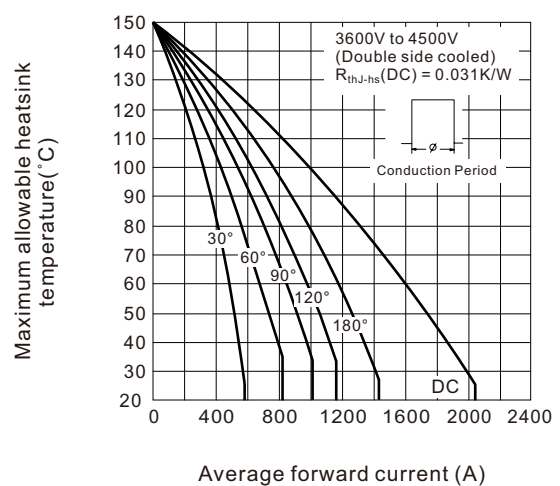


Fig.5 Forward power loss characteristics

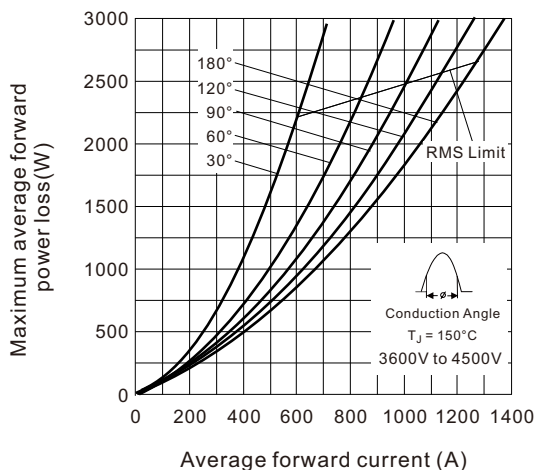
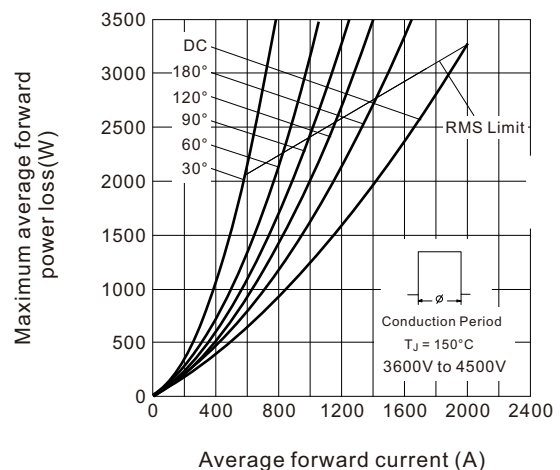


Fig.6 Forward power loss characteristics



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Fig.7 Maximum non-repetitive surge current single and double side cooled

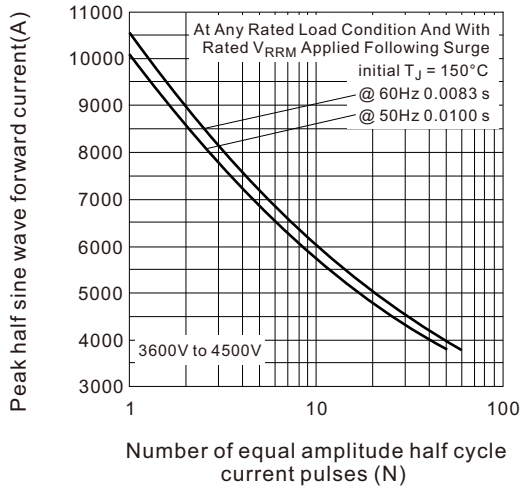


Fig.8 Maximum non-repetitive surge current single and double side cooled

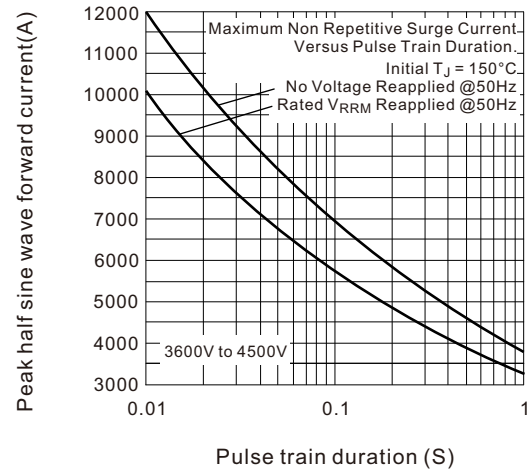


Fig.9 Current ratings characteristics

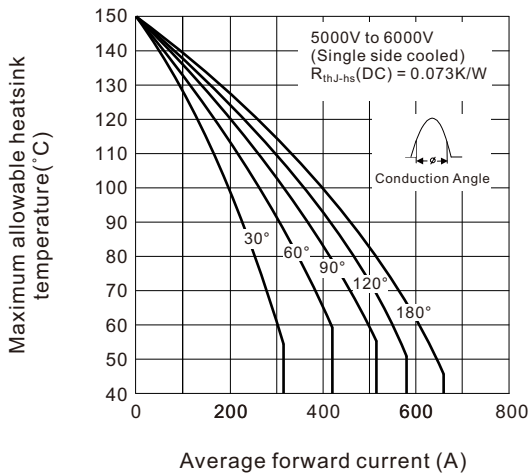


Fig.10 Current ratings characteristics

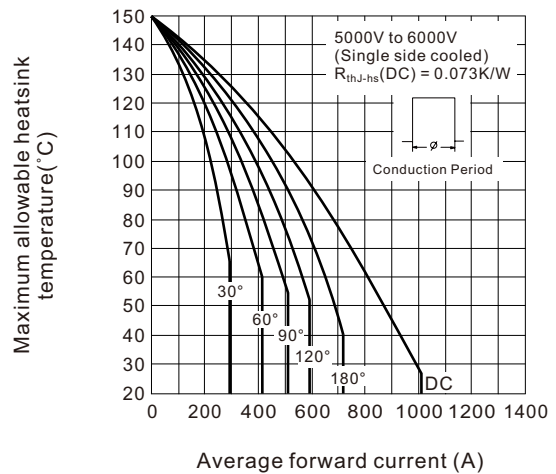


Fig.11 Current ratings characteristics

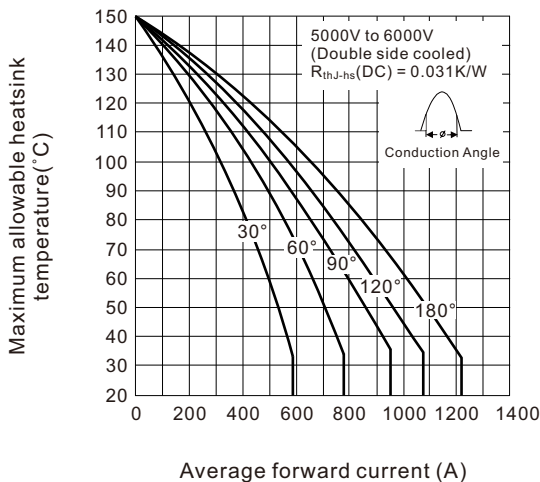


Fig.12 Current ratings characteristics

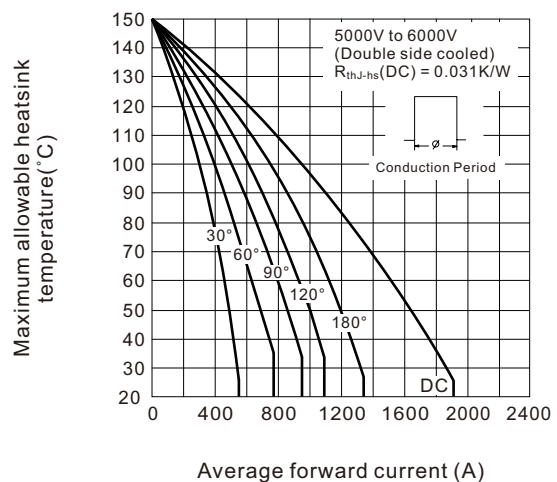


Fig.13 Forward power loss characteristics

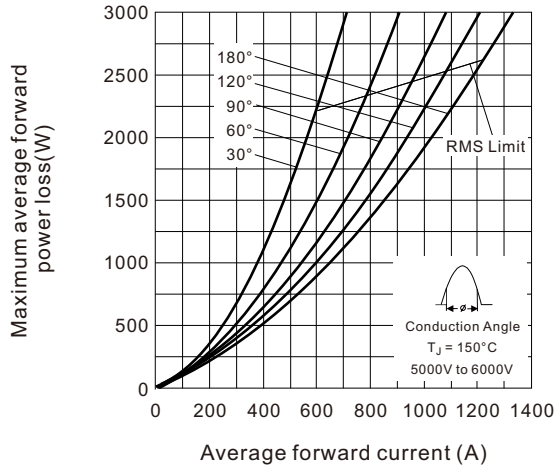


Fig.14 Forward power loss characteristics

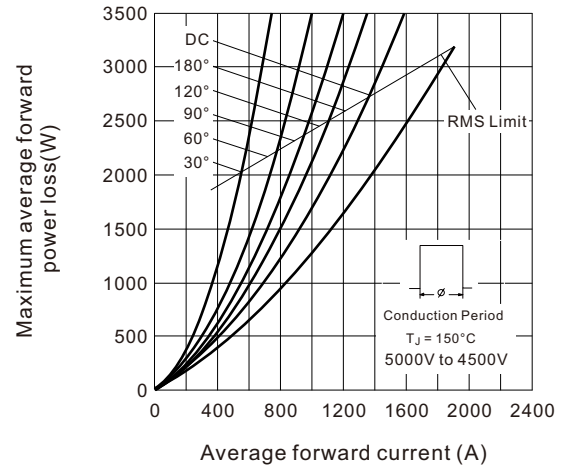


Fig.15 Maximum non-repetitive surge current single and double side cooled

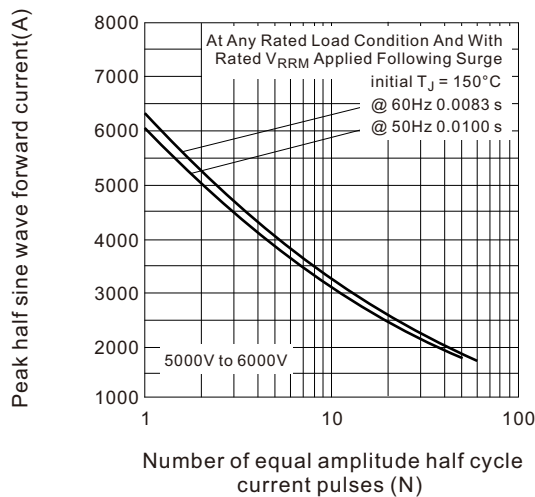


Fig.16 Maximum non-repetitive surge current single and double side cooled

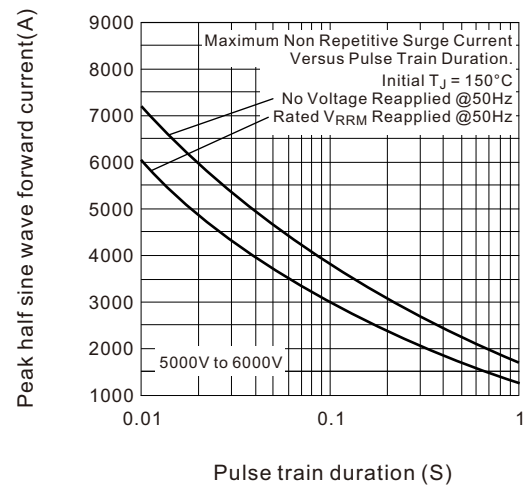


Fig.17 Forward voltage drop characteristics

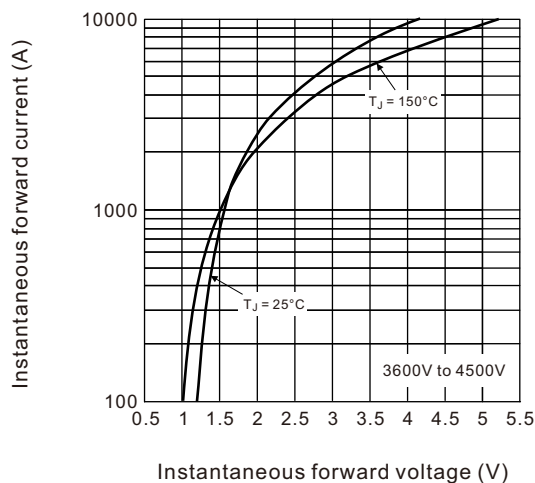


Fig.18 Forward voltage drop characteristics

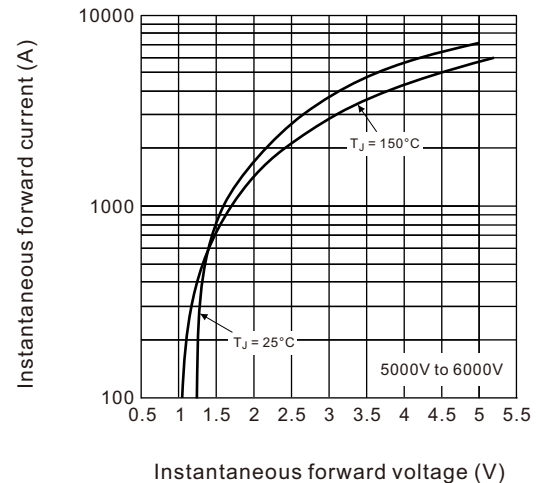
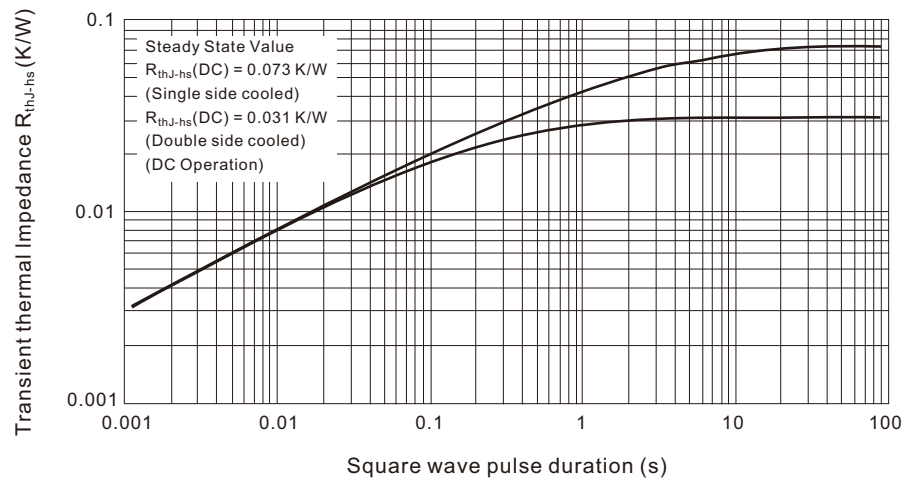


Fig.19 Thermal Impedance R_{thJ-hs} characteristics



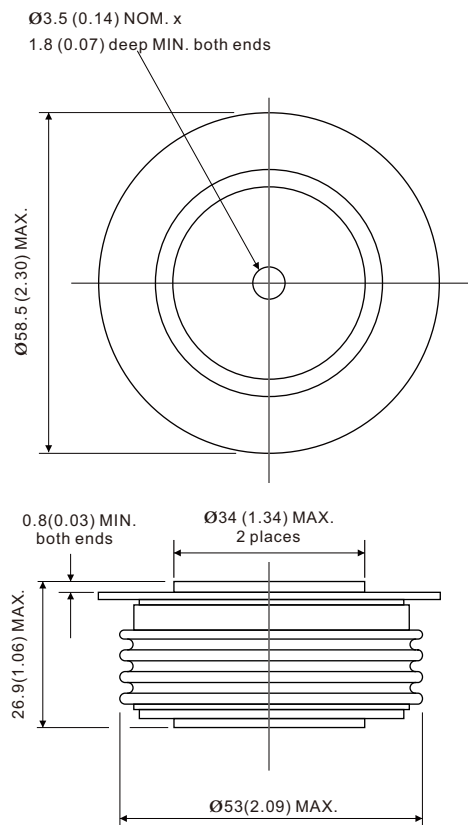
ORDERING INFORMATION TABLE

Device code

D	1070	C	40
①	②	③	④

- ① - "D" for standard recovery diode
- ② - Maximum average forward current, "1070" for 1070A
- ③ - Case style : "C" for Nell's C-type Capsule, DO-200AB (B-PUK)
- ④ - Voltage code, code x 100 = V_{RRM}

DO-220AB (B-PUK), Nell's C-type Capsule



All dimensions in millimeters (inches)

